

gages to capture the function that defines bending moment with depth. In Statesville, there were strain gages at 8 depths – spaced 4 feet apart. This was done, primarily, to provide full depth gages as well as work within the project budget. The gages should have been clustered around the potential depth of soil contact on the wall or used in a tighter configuration. In general, the inclinometer was under-used on the project. There could have been many more inclinometer instrumented piles with little additional cost to the project.

Overall, there should have been sufficient provision to try to get “the most bang for the buck” on the test walls. Since deflections, stresses, and moments were less than expected, addition of a surcharge load behind one or both walls would have given an additional learning opportunity for the test. In addition, truly saturating the backfill to relieve any negative pore pressure would help rule out soil suction as a source of the increased soil strength/decreased earth pressure.

5.5 Monroe Load Test

Building on the experience in Statesville, the instrumentation plan was modified for the Monroe test site. In addition, it was proposed to provide a surcharge on one side of the excavation to force an active earth pressure wedge to develop and drill wells through which the retained soil on the other side could be saturated. Unfortunately, insufficient right of way, unavoidable overhead utilities, the location of a drinking water well, and proximity to residences prevented these additional measures. Sheet pile installation was conducted by NCDOT Division 10 Bridge Maintenance personnel.

5.5.1 Instrumentation System

Based upon lessons learned from the Statesville test, the instrumentation plan was amended to maximize the ability to measure earth pressure at the second site. From the